Edgewood Area - Aberdeen Proving Ground, Maryland 21010-5424
U.S. Army Soldier and Biological Chemical Command

Hazardous Material Explosion Chambers

FEATURES:

- Test chamber of approximately 16,000 ft^3
- Remote video monitoring system (time elapse of standard mode).
- High speed data acquisition system.
- Easy to configure process controller to receive multiple inputs from temperature, pressure, and humidity sensors.
- Air monitoring system for first entry monitoring of personnel and test equipment.
- Analytical support for user test systems featuring a multi-port vapor collection system for high and low concentrations (10^4 to 10^{-4} mg/m^3) of toxic material

The Edgewood Chemical Biological Center maintains two Hazardous Material Explosion facilities located at Edgewood. Both facilities have chambers uniquely designed for total containment in the testing of chemical (military and industrial) related equipment, and explosive/toxic munitions. Chemicals and munitions may be tested simultaneously, if needed, under engineering controls. In addition, these facilities are capable of testing under various climatic conditions.

Both chambers are filtered by a 5,000 cfm charcoal adsorber filter system that provides a complete air change every 3 minutes, maintaining a 1/4 inch of negative pressure with the exhaust and intake air ports open. This system contains High Efficiency Gas Adsorbers (HEGA) and High Efficiency Particulate Adsorbers (HEPA). Both facilities are equipped with an air breathing system capable of supporting four people under moderate working conditions wearing commercially supplied EPA high-performance, totally encapsulating protective suits. The chambers are equipped with a remote deluge system using a revolving high velocity twin jet nozzle that can wash down the interior with premixed solutions from 1,000 and 1,200 gallon mixing tanks.

Each facility is outfitted with an elementary neutralization system that can process up to 10,000 gallons of hazardous/nonhazardous waste generated from testing. An on-site surety lab for toxic material can be used as a stand-alone lab or to support toxic chamber operations. All operations are conducted in accordance with standard operating procedures approved by the Edgewood Chemical Biological Center Safety and Environmental offices to comply with all applicable state and federal laws and regulations. This ensures safe handling and disposal of all hazardous material used during any operation. The facilities are currently approved to handle 170 gallons (one ton container) of military unique chemical material and industrial material, one pound of explosives when combined with chemical material, and five pounds of explosives without chemical material.

The chambers are useful for testing equipment and systems in a toxic environment in anticipation of domestic preparedness. Explosive tests will reveal the blast resistance of models and components such as motors, shields and other special equipment. Tests will also reveal the environmental impact of fuels, and plastics should they explode, as well as the physical behavior of materials when they interact with and penetrate other objects. The capabilities of explosive devices such as flares, munitions, smoke grenades, rocket and mortar ammunition, delays and igniters, decoys, and fireworks can be tested. Developers working with hazardous samples can test for the possibility of contamination migration, and take precautionary measures to mitigate harm and maximize human safety. A broad range of toxic, hazardous and industrial chemicals can be examined in the toxic/explosive chambers for developers and manufacturers to test quality, safety, performance, impact and capabilities. Companies awarded government contracts for the production of explosion resistant items can use the chambers in product development.

For additional information on this facility, please E-mail engineering.directorate@sbccom.apgea.army.mil.

For information on Technology Transfer applications, please contact us by E-mail (technical.outreach@sbdcom.apgea.army.mil) or by fax to 410-436-6529.

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